

Application No: 10/779,454

Amendment C

Reply to Office Action Dated May 1, 2007

Attorney Docket No: 3926.063

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REMARKS

Claims 1 and 4-18 are pending in the application. Claims 1, 4-6, 11, 13-14, and 17-18 have been amended. Claims 2-3 have been cancelled.

Claim Rejections - 35 U.S.C. § 112

Claims 5, 13-14, and 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

The claims have been amended to overcome the rejections.

Claim Rejections - 35 U.S.C. § 102 & 103

Claims 1 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication No. 10-26724.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-26724 and further in view of Hornbeck (US 5,650,881).

Claims 5, 6, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-26724 and further in view of Mochida et al. (US 4,458,446).

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-26724 and further in view of Haas et al.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-26724 and further in view of Underwood (US 4,118,625).

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Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-26724 and further in view of Isogai et al. (US 2003/0090647).

Claims 16-18, as best understood by the Examiner, are rejected under 35 U.S.C. 103(a) as being unpatentable over Haas et al. and further in view of Isogai et al.

The present invention concerns a door space monitoring device that monitors a door swing area of a vehicle door and thus is part of the vehicle and has close relationship with the vehicle door. According to amended claim 1, the micro-mirror-unit has at least one pivotable planar mirror associated with an additional non-planar mirror and thus realizes the two-dimensional monitoring area in which a light beam is pivoted as a reflected beam by the pivotable planar mirror and this reflected beam then encounters the additional non-planar mirror, which due to its non-planar design realizes a two-dimensional monitoring area that corresponds to the contour of the vehicle door. The surface of the non-planar mirror corresponds to the contour of the vehicle door and thus a very simple and reliable two-dimensional monitoring area of the vehicle door is achieved.

According to amended claim 6, the micro-mirror-unit and the photo-detector are provided in the area of the pivot axis of the vehicle door, which makes it possible to realize an especially simple and secure monitoring with the help of a suitable two-dimensional monitoring area for the vehicle door.

JP 10-26724 describes a multi-point distance measuring system for a camera (see especially Fig. 1 with description). Nowhere does JP 10-26724 mention or suggest a reference to a vehicle or door space monitoring device for a vehicle. The merely possibility of determining the distance of an object to multiple points and thus implicitly detecting the presence of the object for a camera with such a multi-point distance measuring system does not provide any hint to integrate this camera multi-point measuring system in a door monitoring device. This system is specifically designed for the application for cameras due to the ability of determining the distance for multiple measuring points at the same time. The technical requirements of

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temperature stability and mechanical robustness especially vibration rigidity for a camera system are totally different from those for an automobile system for monitoring the vehicle door space. Therefore, it is not obvious to transfer such a camera system to a vehicle door space monitoring device.

Although JP 10-26724 discloses the application of two DMD-chips, each of which has a plurality of individual planar mirrors corresponding to the first micro-mechanical pivotable planar mirror of the present invention, it does not disclose the second additional non-planar mirror.

Hornbeck only very generally discloses that the individual mirrors of a DMD-array can have concave and/or convex and/or planar surfaces and does not provide a hint anywhere that the surface should correspond to the contour of the vehicle door. Especially, Hornbeck, just as JP 10-26724, does not disclose anywhere any reference to an automobile, especially not a reference to a vehicle door or a door space monitoring device for a vehicle door.

It is, therefore, clear that a combination of JP 10-26724 and Hornbeck also does not disclose or suggest the specific mirror arrangement for a door space monitoring device with the specific design of a single additional non-planar mirror.

The feature of claim 6, namely the micro-mirror-unit and the photo-detector are provided in an area of a pivot axis of the vehicle door, is not disclosed by JP 10-26724, or Hornbeck, or Mochida. Mochida discloses an ultrasound-based remote control system for a door, in which the ultrasound sensor and the ultrasound receiver are arranged at the front region of the fender on the fender in the mirror "k" (see Figs. 5A & C) or in the handle "a" of the front door and the back door of the vehicle. The front region of the fender or the handle of respective door is not in the region of the pivot axis of the vehicle door, rather is far from the region of the pivot axis of the vehicle door. Especially, the door opening mechanism must be far way from the pivot axis of the door so that it is possible for a simple opening and closing of the door without overly large expenditure of force. Also, the mirror "k" with the ultrasound sensor and ultrasound receiver at

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the front region of the front fender is deliberately arranged far away in order to realize a large three-dimensional monitoring region "B" with large angle, thus to possibly safely encompass the opening region of the vehicle door. This can only be achieved by a position at the front end of the vehicle and thus far away from the pivot axis of the vehicle door. It is, therefore, clear that the sensors according Mochida, on the one hand, have a completely different sensor principle (ultrasound vs. optical sensors) from that of the present invention, thus applying to clearly different monitoring regions (three-dimensional monitoring region with relative large club opening vs. two-dimensional monitoring region) and, on the other hand, have different positions of the sensor units (far away vs. in the area of the pivot axis of the vehicle door), which lead to completely different effects.

It is, therefore, clear that claims 1 and 6 are not disclosed or suggested by JP 10-26724, or Hornbeck, or Mochida, or any combination thereof. Mochida shows a system for remote control and monitoring of a vehicle door, which concerns a totally different concept from the present invention. Mochida does not contain any hint to apply a different sensor concept other than ultrasound concept, especially not such a specific optical monitoring concept with DMD-devices according to the present invention. JP 10-26724 and Hornbeck have no connection with automobiles so that can also not be combined with Mochida.

The dependent claims should be allowed upon allowance of independent claim 1.

Entry of the amendments is requested because no new feature has been added.

The Commissioner is hereby authorized to charge any fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 50-0951.

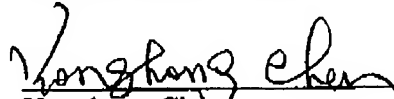
Favorable consideration and early issuance of the Notice of Allowance are respectfully

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requested. Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

Respectfully submitted,

  
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